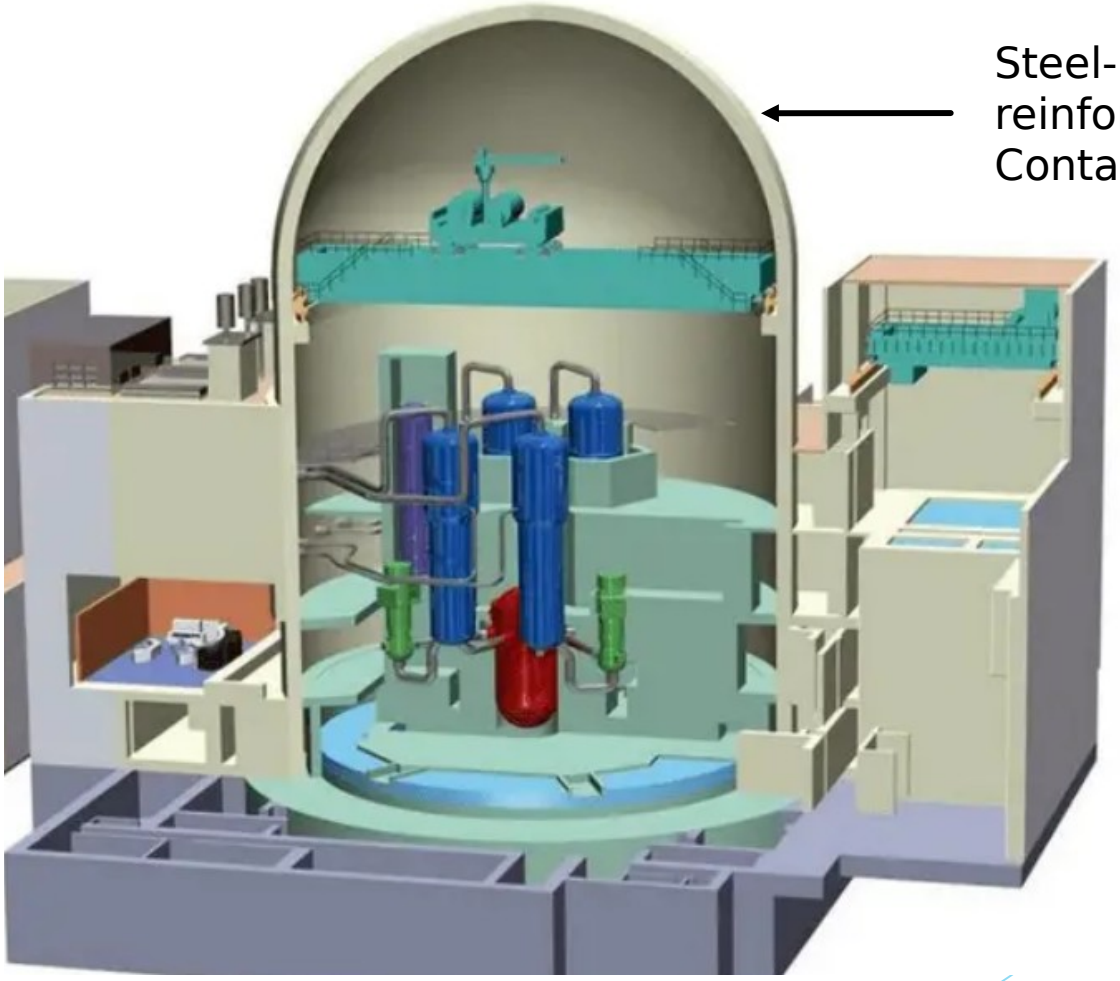
Nuclear Power Plant Systems

Jeffrey Mahn

Nuclear Engineer (Retired)

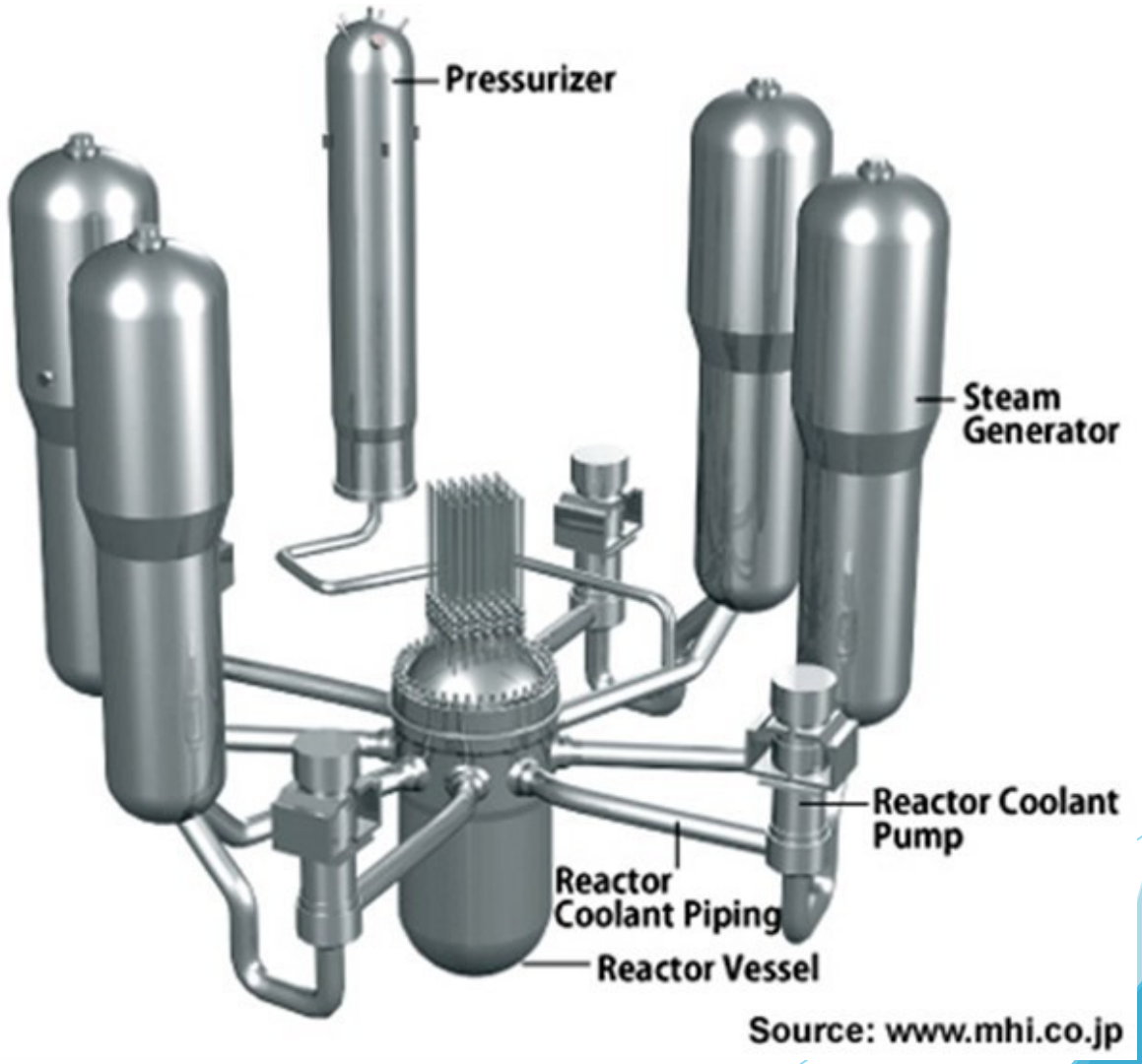
Palo Verde Nuclear Plant (3 PWRs)

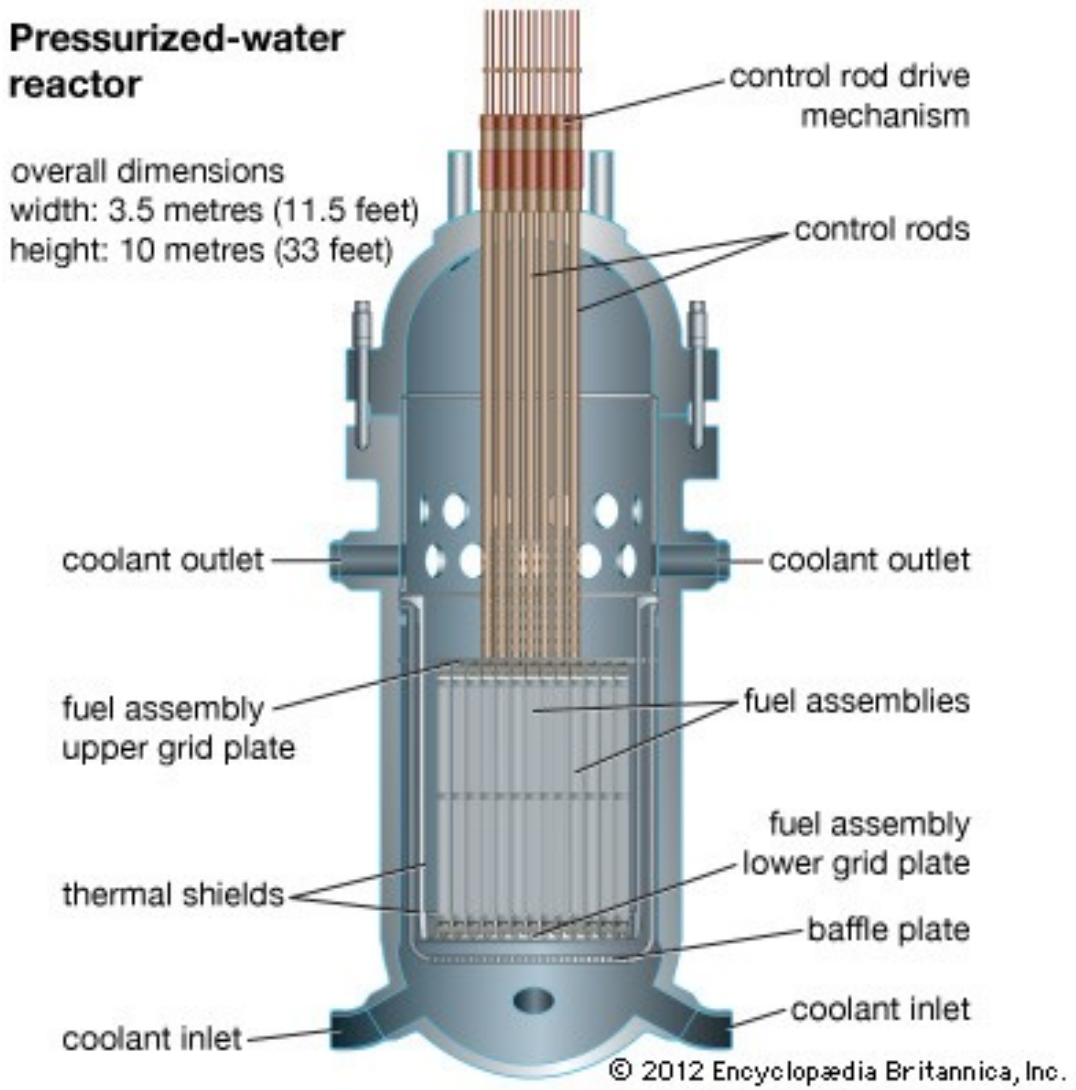
PWR Containment Building



Steel-lined, Steel-reinforced Concrete Containment Building

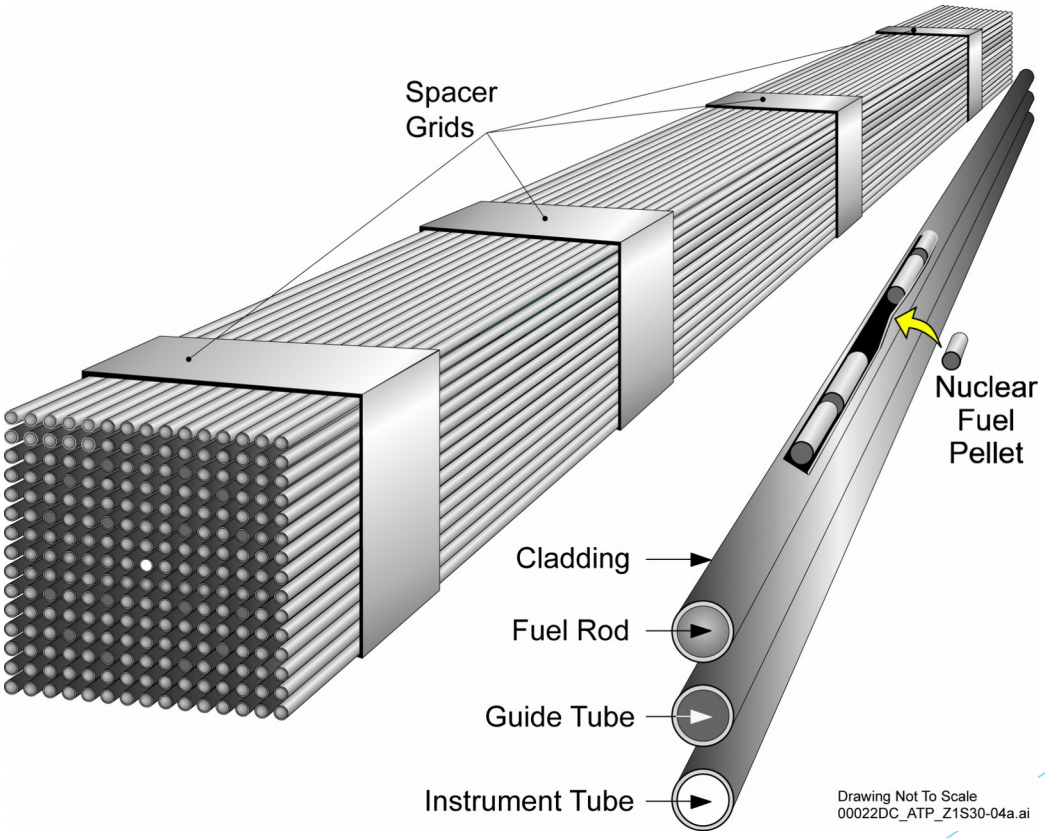
PWR Primary Coolant System



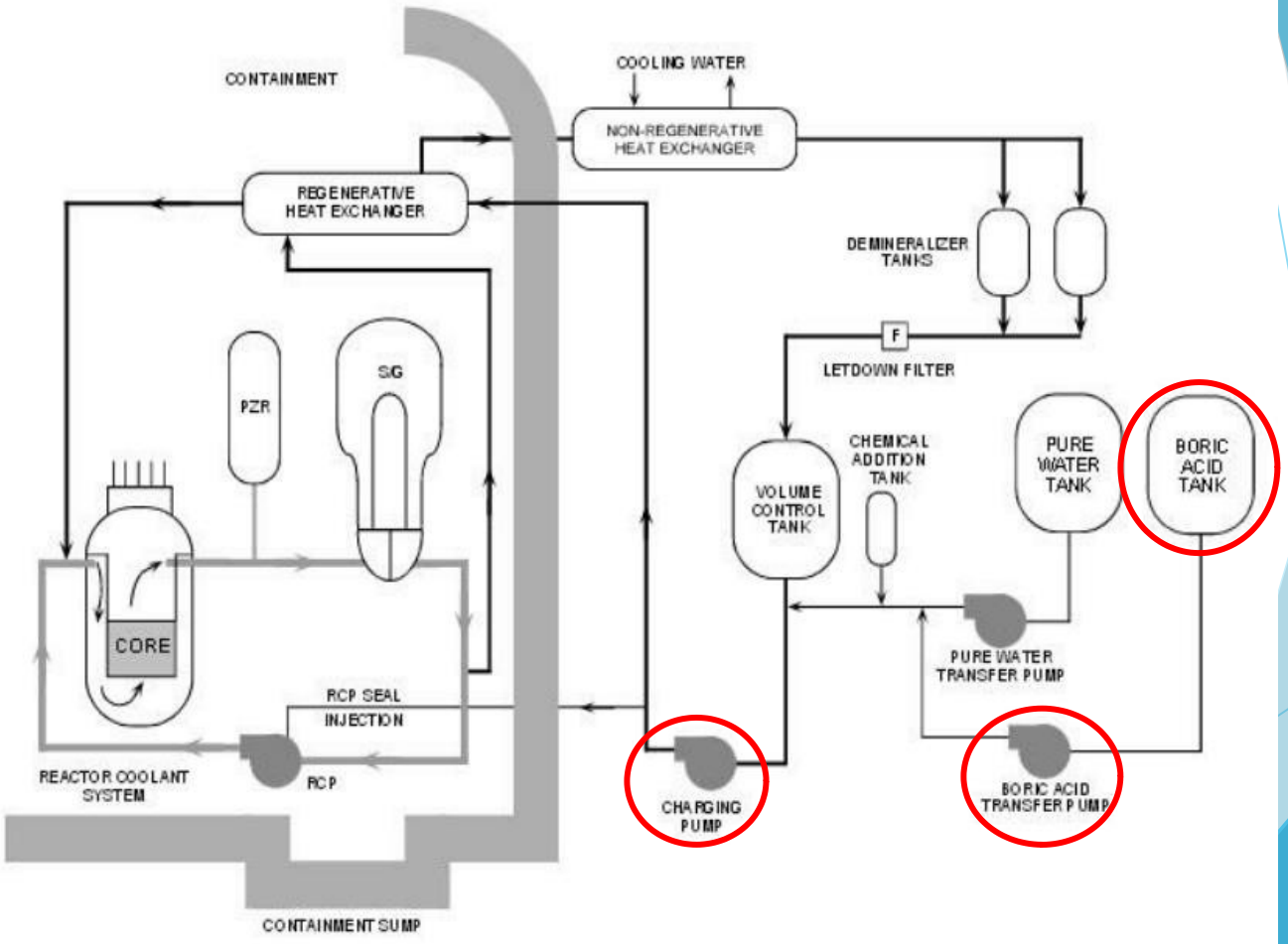


PWR Core and Control Rod System Configuration

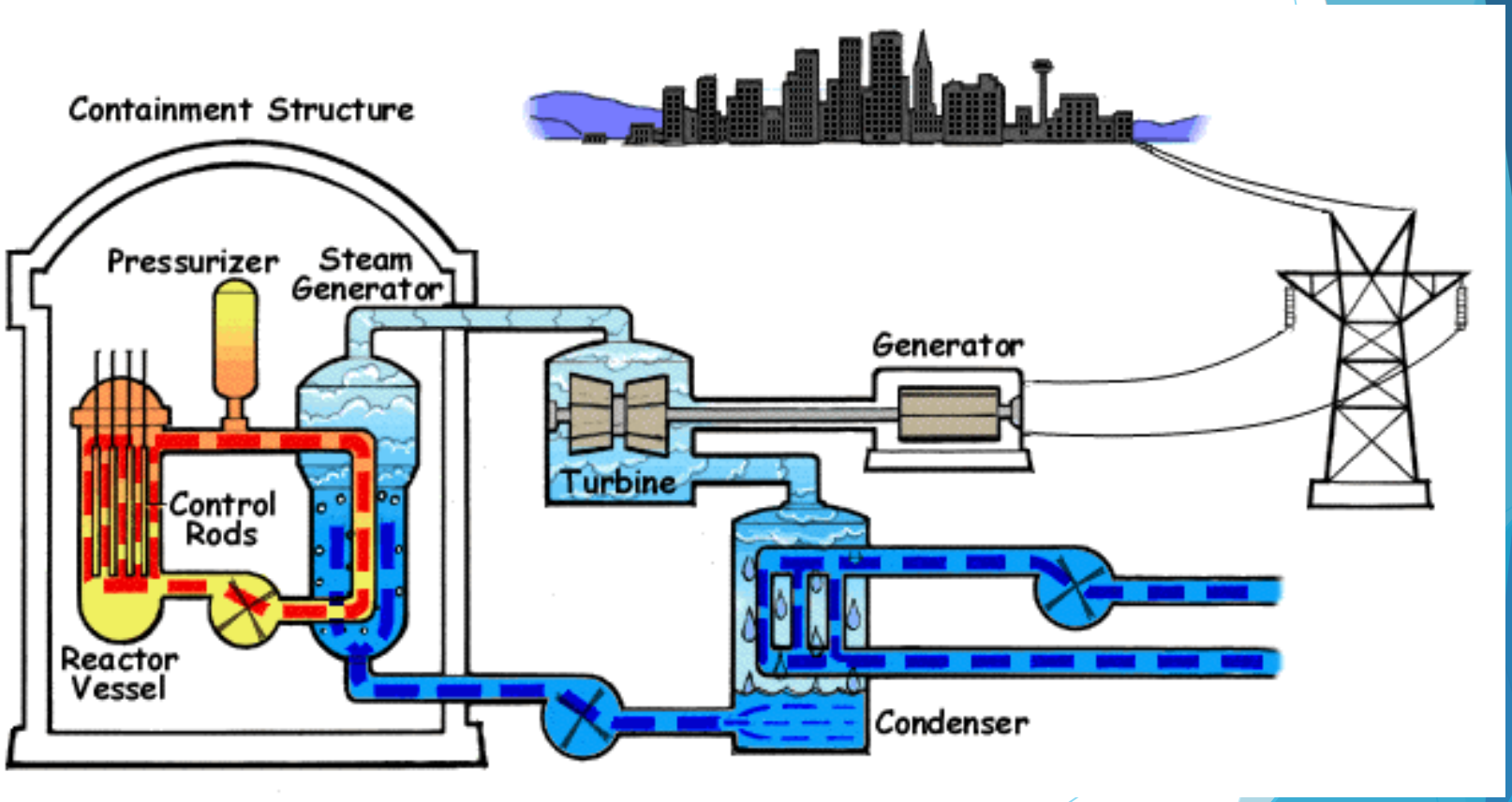
PWR Nuclear Fuel Assembly



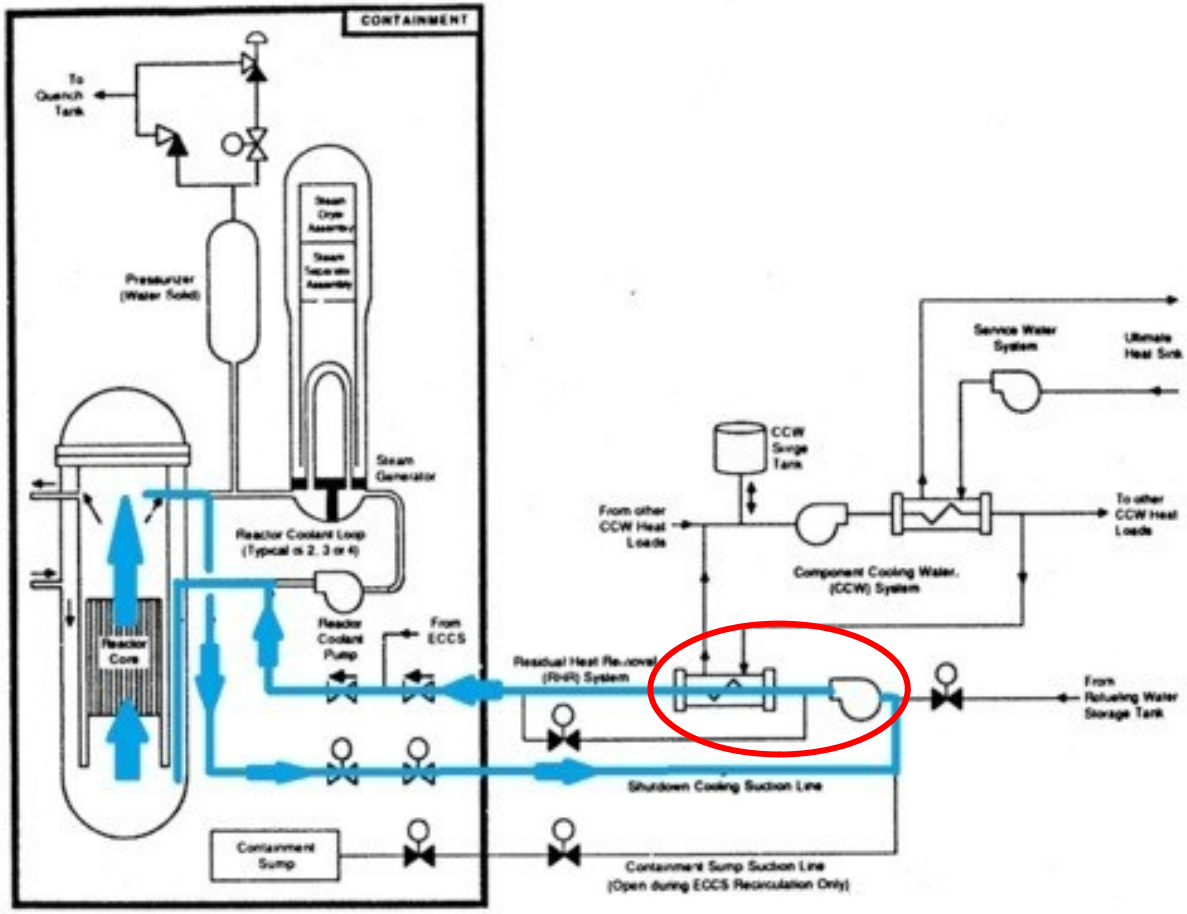
PWR Boric Acid Reactivity Control System



PWR Operational Heat Removal System



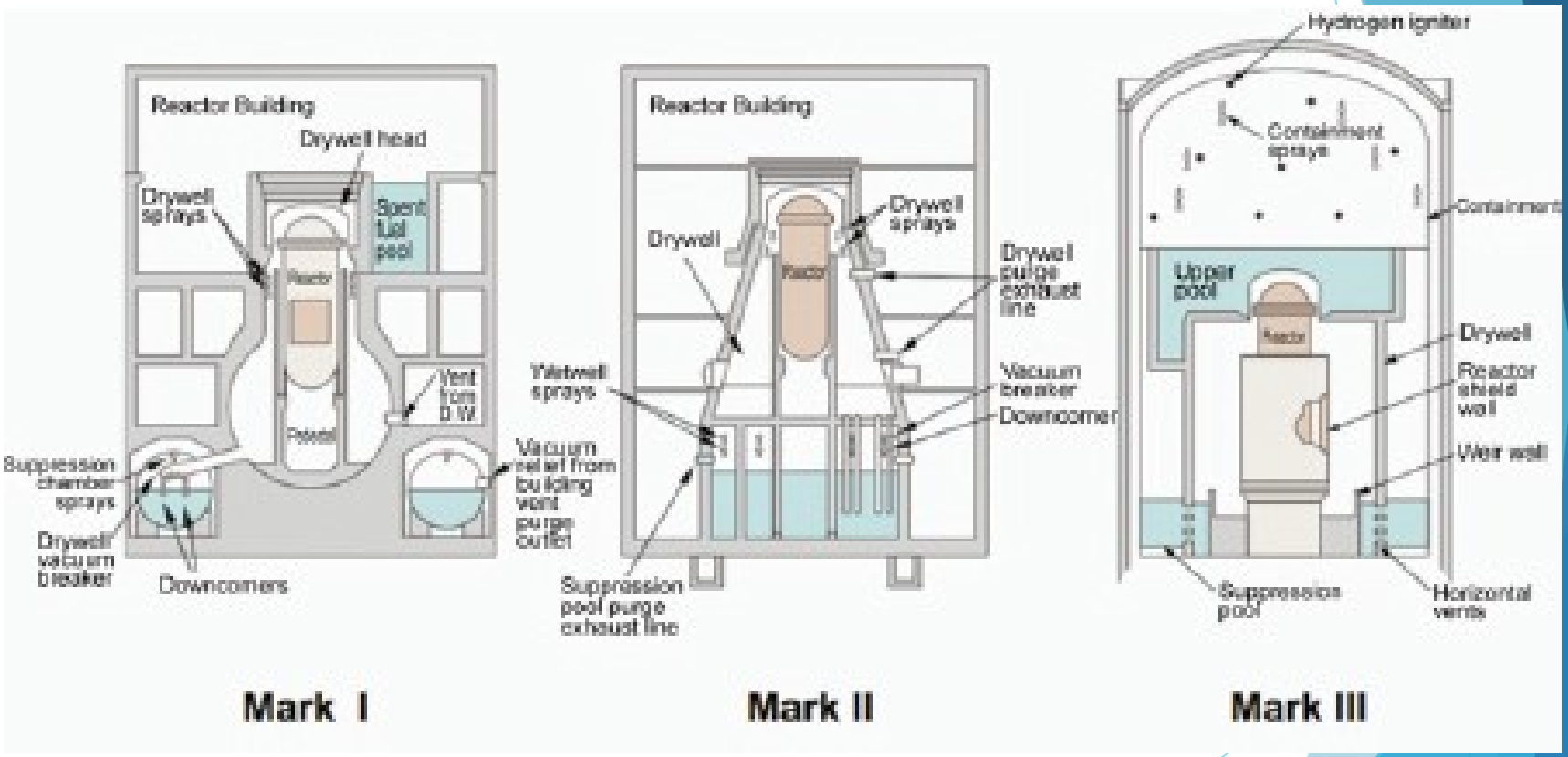
PWR Shutdown Heat Removal System



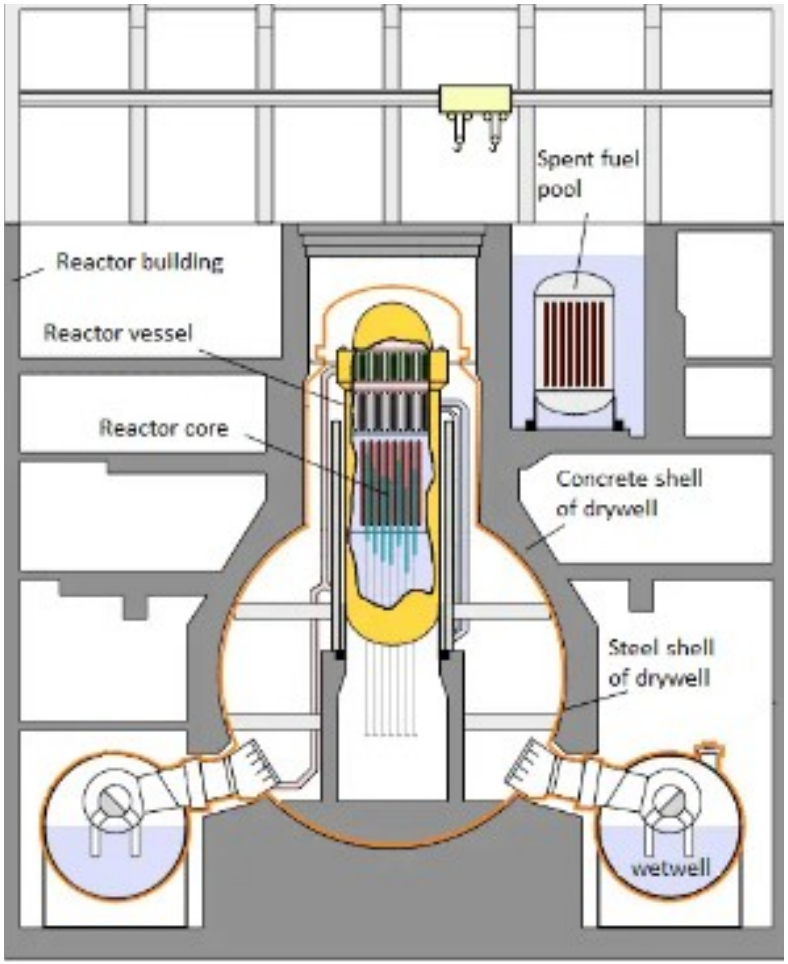
Normal PWR Heat Transport Paths During Shutdown Cooling

Brown’s Ferry Nuclear Plant (3 BWRs)

BWR Containment Structures



BWR Mark I Containment Structure

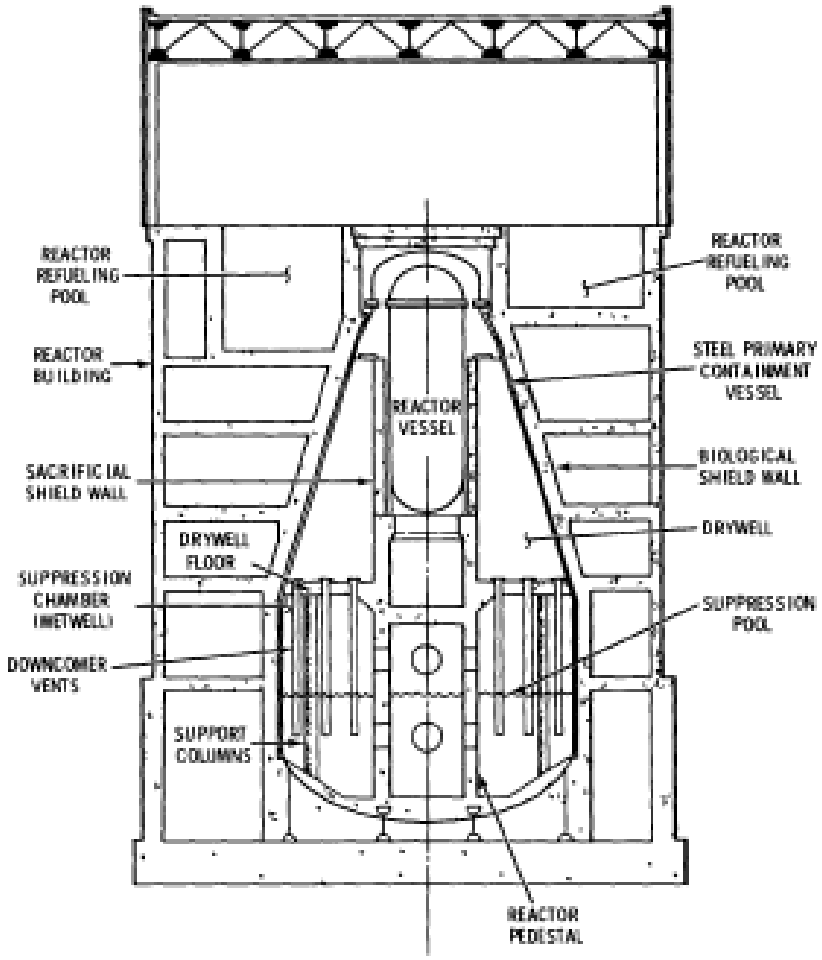


Drywell consists of concrete enclosure with steel liner

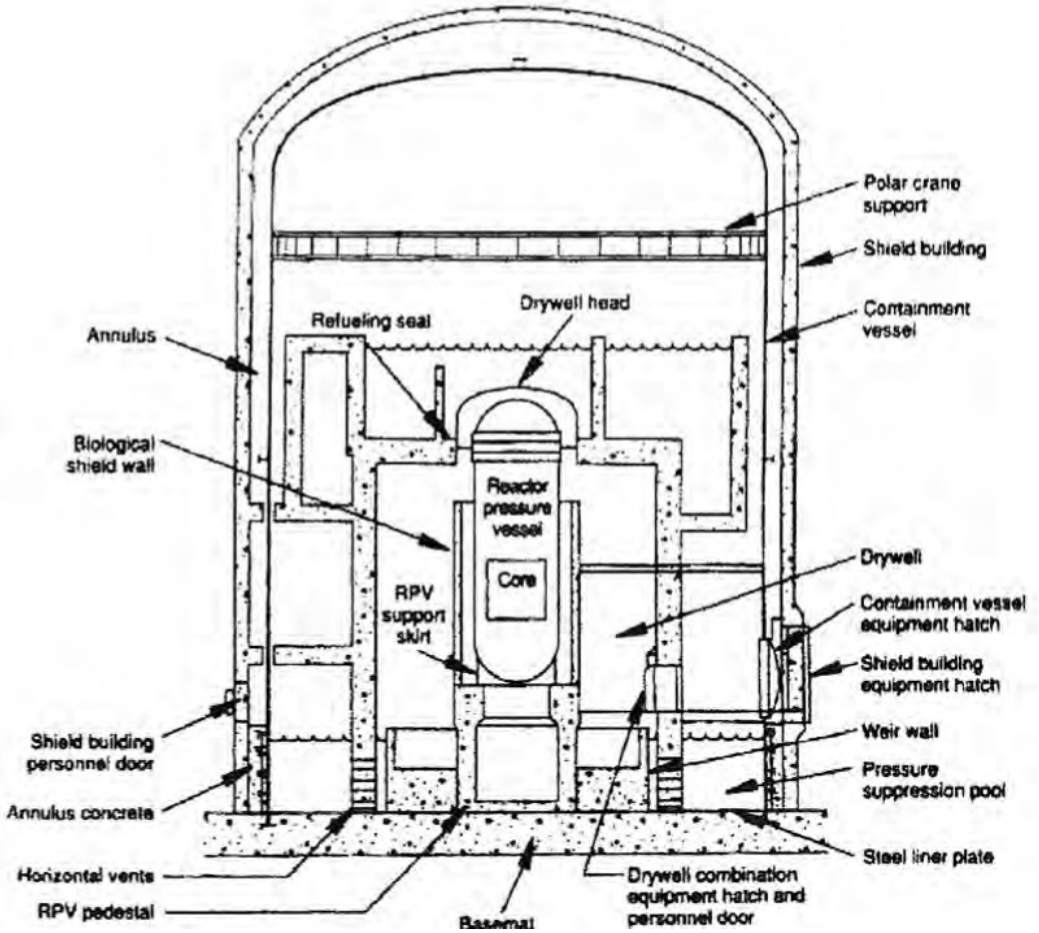
Wetwell is steel torus half-filled with water

BWR Mark II Containment Structure

Steel Vessel Encloses Both Drywell and Wetwell

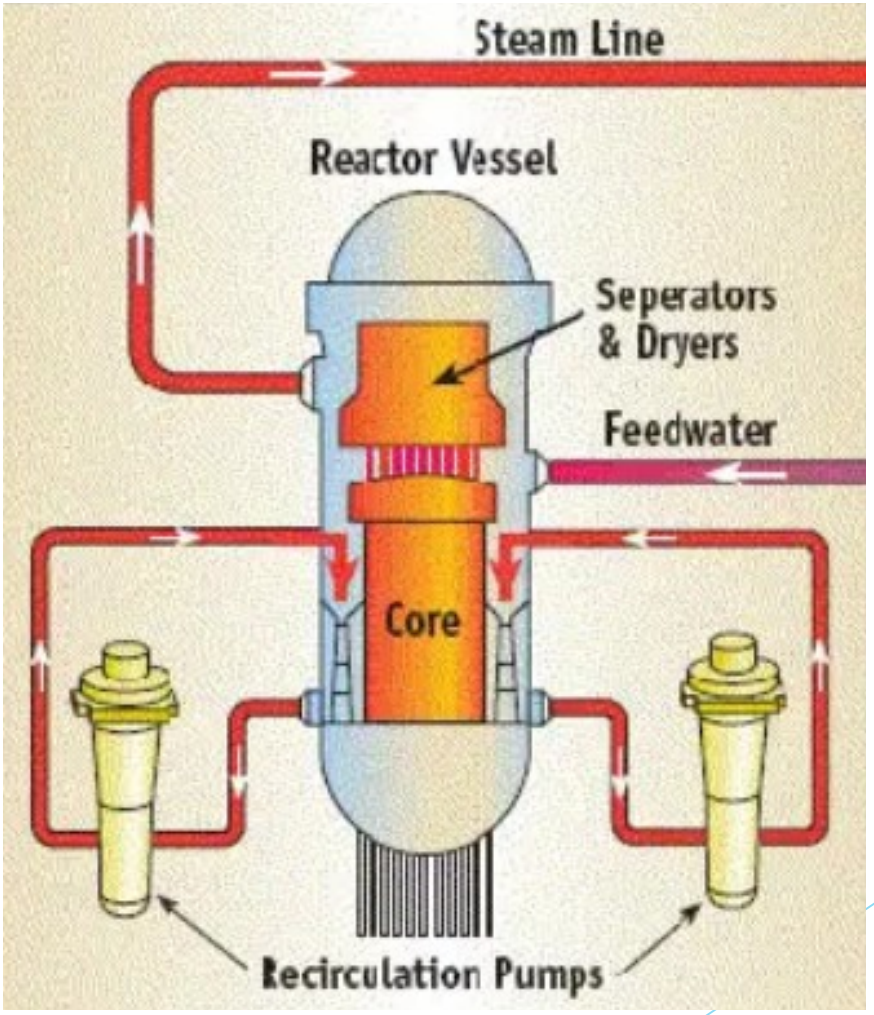


BWR Mark III Containment Structure

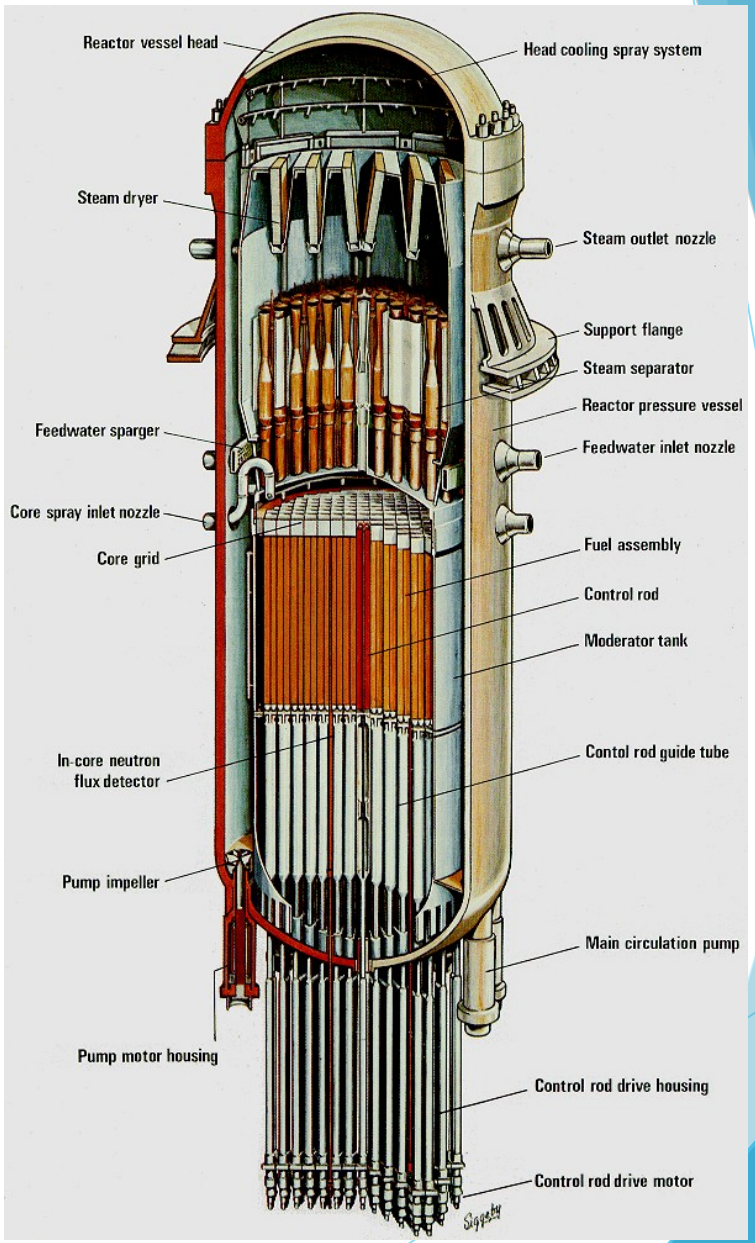


Drywell and Wetwell Contained Within Steel-reinforced Concrete Building

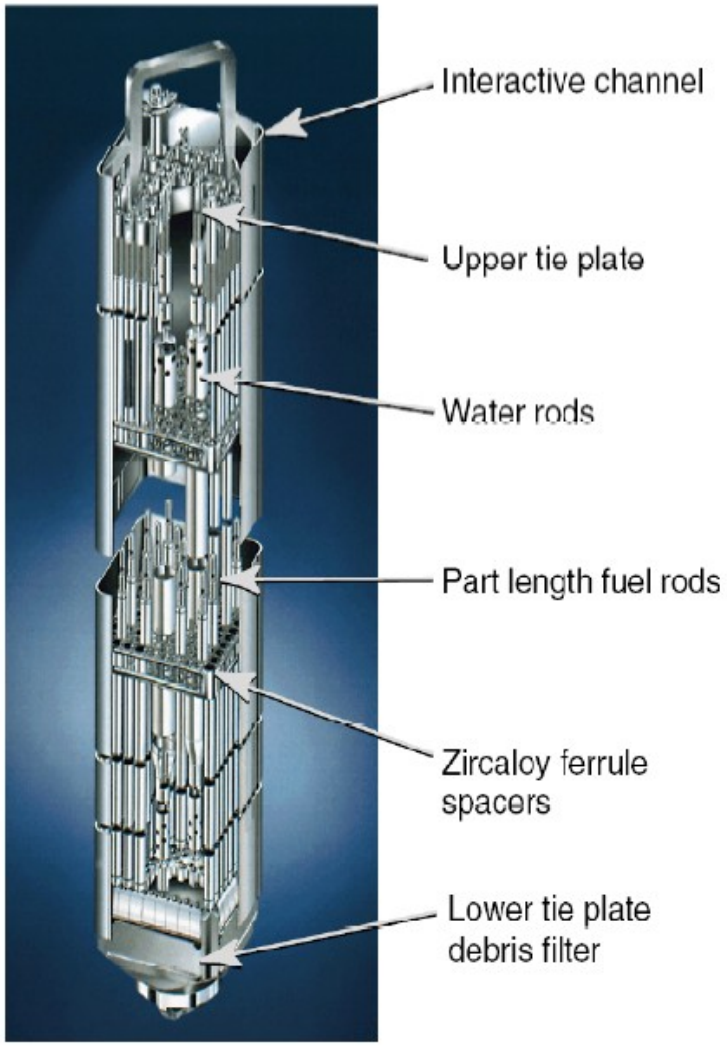
BWR Primary Coolant System



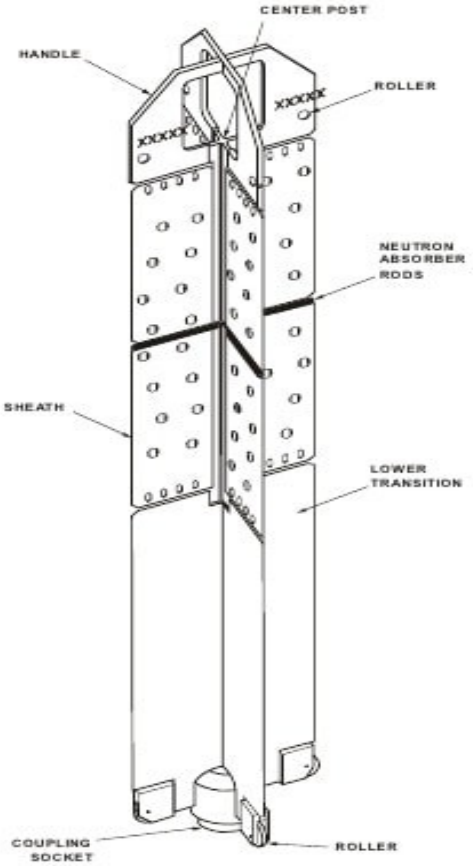
BWR Core and Control Rod System Configuration



BWR Nuclear Fuel Assembly



BWR Control Rod Assembly



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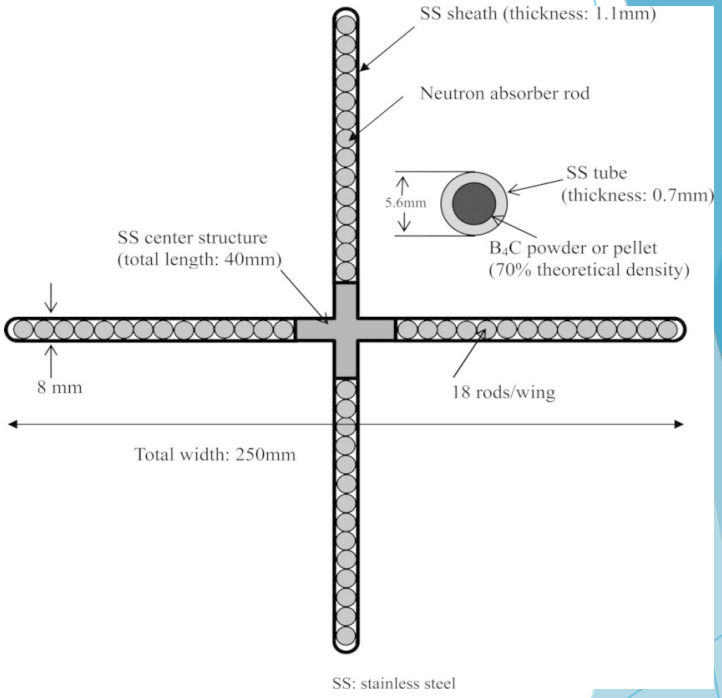
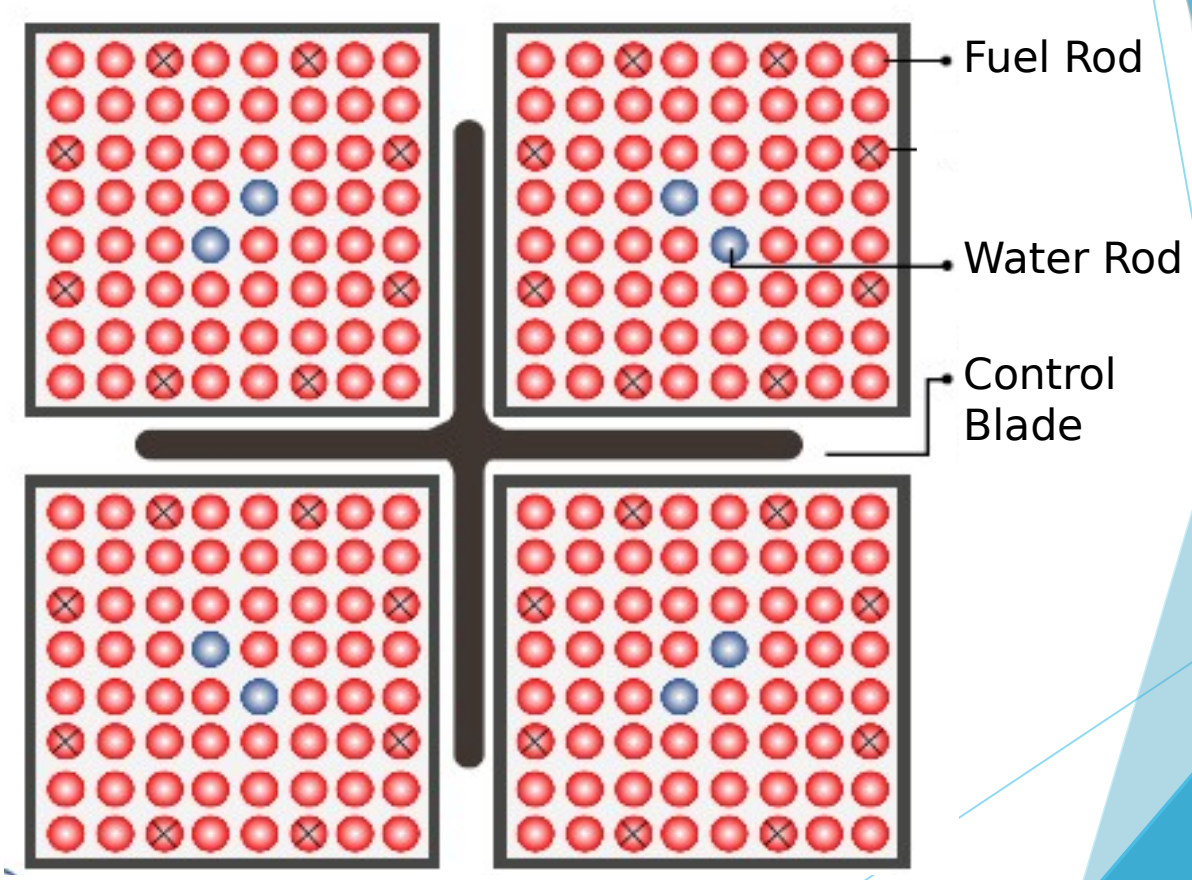
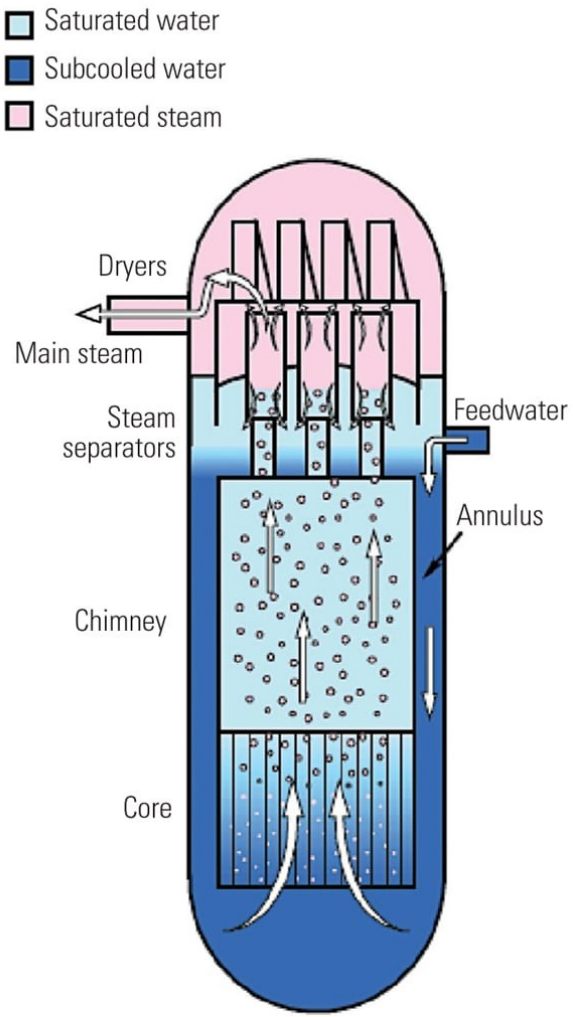


BWR Fuel Assembly and Control Blade Configuration



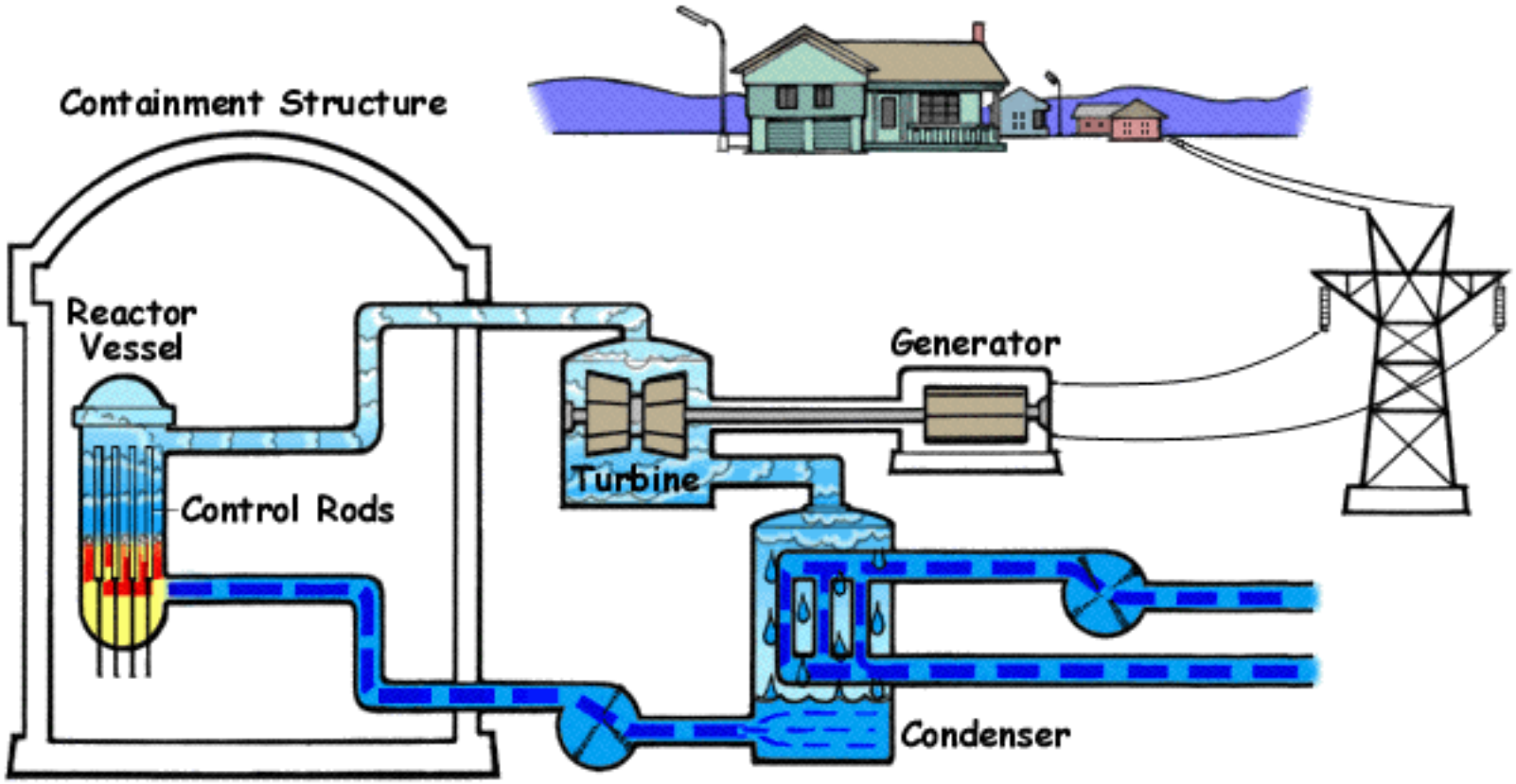
BWR Feedwater Flow Reactivity Control

Decreased feedwater flow causes increased boiling in core; increase in steam bubbles causes decrease in core reactivity (less neutron moderation)



Increased feedwater flow causes decreased boiling in core; decrease in steam bubbles causes increase in core reactivity (more neutron moderation)

BWR Operational Heat Removal System



BWR Shutdown Heat Removal System